

TECHNICAL DATA SHEET

VANTABLACK[®] 100Vantablack[®] 100 Series Ultra-black Coatings

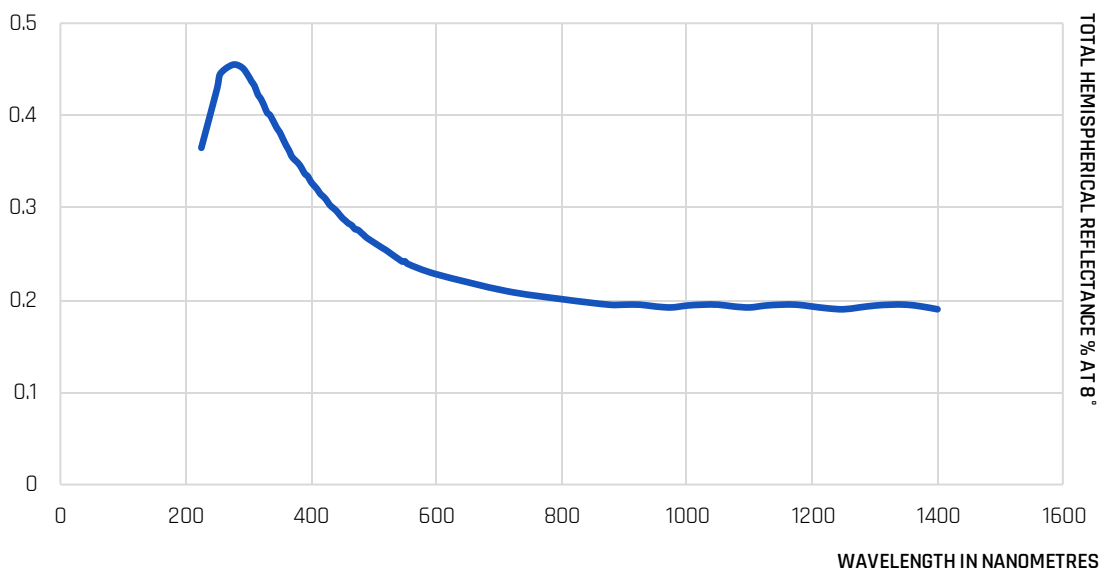
PRODUCT DESCRIPTION

Vantablack 100 Series is the premium ultra-black coating for terrestrial and space applications, offering 0.3% Total Hemispherical Reflectance. It is engineered to suppress stray light and thermal noise across the visible to infrared spectrum and beyond. Applied as a coating service with proprietary technology.

Table 1: Typical Optical Properties of Vantablack 100

SURFACE APPEARANCE	Matte Ultra-black
TOTAL HEMISPHERICAL REFLECTANCE (220 - 1400nm) (2 - 8 μm)	< 0.2% < 0.9%
BRDF	Near Lambertian
EMISSIONIVITY	0.998

Typical Vantablack110 UV-Vis Spectrum



Typical Vantablack 100 Series IR Spectrum

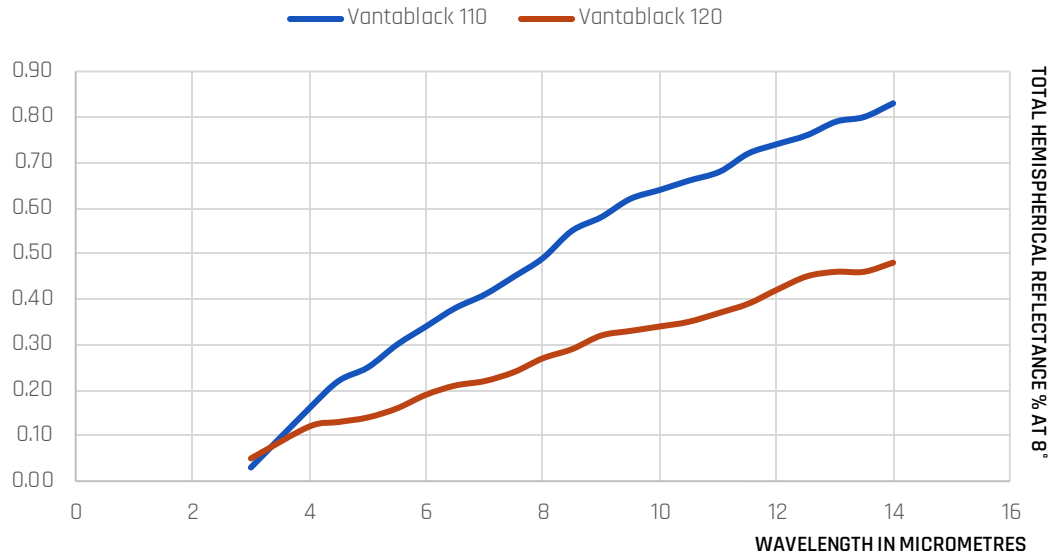


Table 2: Typical Physical Properties of Vantablack 100

OUTGASSING (ASTM E595-77)	
%TML	< 0.5
%CVCM	< 0.01
ATOMIC OXYGEN (After 1.2 years in LEO RAM facing MISSE-10*)	
PRE-FLIGHT THR (550nm)	0.25%
POST-FLIGHT THR (550nm)	0.3%
ΔTHR	+ 0.05%
RADIATION RESISTANCE (ECSS-Q-ST-60-15C)	Pass
VACUUM UV EXPOSURE (ECSS-Q-ST-70-06C)	Pass
SHOCK AND VIBRATION (MIL-STD-810H)	Pass
OPERATIONAL TEMPERATURE RANGE	
In Air	-196 - 300°C
Under Vacuum	-196 - 700°C
THERMAL SHOCK (Temperature swing over 5 minutes)	-196 - 200°C
HUMIDITY RESISTANCE	Hydrophobic
COATING MASS (mg/cm ²)	< 1.4
COATING THICKNESS (µm)	Average 100

*Fluence 3.93 x 10²⁰ atom/cm²



PRODUCT DESCRIPTION

Vantablack 100 Series exhibits excellent adhesion to a wide range of substrates and maintains its integrity under extreme mechanical and thermal stress, including severe shock and vibration experienced during launch conditions. It performs reliably even on complex geometries such as knife edges. While the coating is not resistant to direct handling, impact, or abrasion, our expertise in the design and manufacture of bespoke tooling allows us to develop tailored

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processing, handling, and shipping solutions. Our custom approach ensures protection throughout all stages of manufacturing and deployment, accommodating virtually any substrate or geometry.



SURFACE PREPARATION

Substrates will be cleaned as part of the coating service. Vantablack 100 must be applied to surfaces that are clean, dry, and free from grease, particulates, or any loosely adhering materials to ensure suitability for Ultra-High Vacuum (UHV) treatments. Vantablack 100 can be applied directly to most substrates and conversion coatings. Please consult your Vantablack representative for guidance on specific materials.

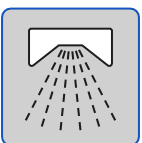


ENGINEERING AND TOOLING

We can provide engineering guidance to help optimize part designs for coating, ensuring the best performance and compatibility with the application process. Because the coating cannot be touched, we design and manufacture custom tooling and fixtures to safely handle parts throughout processing. This includes solutions for high-temperature plasma treatments and spray application.

Table 3: Typical Processing Parameters of Vantablack 100

MAXIMUM PART DIMENSIONS (alternative dimensions may be available)	650 x 450 x 15 mm
PROCESSING TEMPERATURE (low temperature processing available)	280 °C
APPLICATION METHOD (line of sight required)	Spray Process
MAXIMUM LENGTH TO DIAMETER RATIO	3:1
MATERIAL COMPATIBILITY	UHV Compatible



APPLICATION

Vantablack 100 is applied using conventional spray systems. It can be applied manually or using an automated system for high volume components.

After spray-coating Vantablack 100 requires UHV plasma treatment to create optical cavities and give the coating hydrophobic properties.



PACKAGING INFORMATION

We design and manufacture custom packaging to safely ship coated parts, protecting them from physical damage and contamination during transit. Each solution is tailored to the part's geometry.

We also provide handling aids or guidance to ensure the part can be safely unpacked and integrated by the customer without touching or damaging the coated surfaces.



RECOAT

Please consult your Vantablack representative for guidance on recoating.



STORAGE

Coated parts should be stored in a sealed container to avoid any contamination from dust, oils, or particulates.



SAFETY INFORMATION

Before using any Vantablack product, refer to the Material Safety Data Sheet (MSDS) for safe use and handling instructions.

For industrial and commercial use only. Must be handled and applied by trained personnel.



CLEANING THE SURFACE

DO NOT TOUCH THE COATED SURFACE. Compression and contamination of the ultra-black surface will impair optical performance

When handling coated parts, we recommend the use of powder free nitrile/latex gloves.

The surface contamination and dust should be removed using dry compressed air or nitrogen at 1 bar pressure.



TECHNICAL SUPPORT

For further technical support please contact:

- o technicalsupport@surreynanosystems.com